

BIG DATA: NEW COMPETITIVE FORCE IN BUSINESS ENVIRONMENT**Dr Ashok D Gaur**Assistant Professor,
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C P Patel & F H Shah Commerce College, Anand**Abstract**

In today's digital world, data is everything. Every day millions of data are generated and it keeps multiplying by many folds. Billions of people are using social media and social networks every day around the world. The era of kilobytes and megabytes has gone. Now companies are dealing with not only Terabytes but also in zettabyte (1021 bytes equal to 1 zettabyte or one billion terabytes forms a zettabyte). Today the internet is being widely used and it has become a core part of human life. Then questions arise, how to handle such huge data which is generated every day. Handling such complex and big data is never easy. In the present scenario managing and handling, such enormous data is known as 'Big Data'. The concept of big data has become word of mouth today and used by many companies and institutions around the world. The aim of this paper to relate the utilization, benefits, and challenges associated with big data in the present situation.

Keywords: Internet, Digitalization, Big data, Social media

Introduction

McKinsey Global Institute (2011) focuses on the volume in their definition of big data: "Big data refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze." The amount of data collected and stored each day is increasing constantly due to rising data storage capacity; lowering the data storage cost, the development of networks, and the overall digitalization of the society. The term Big Data is a used to describe a set of data which is huge in size and yet increasing exponentially with time. In short such data is too large and complex that none of the traditional data management tools are able to store it or process it efficiently.

The data generated by Stock Exchange are in terabyte per day. These huge data cannot be stored and processed through traditional data management. Similarly Aviation industries can generate data in terabytes per minutes and it may reaches up to many petabyte. From above example we can easily realize why the name Big Data is given. Also we can imagine how such big data is handled, stored and processes.

Concept and Characteristics of Big Data

Big Data refers to the large volume of data that can be structured or unstructured and that uses certain new technologies and techniques to manage it. Structured data means an organized form of data while unstructured data refers to an unorganized form of data. Along with volume of data velocity and veracity is also important for classifying data as Big Data.

The data sets in big data are so large and complex that we cannot manage them using traditional application software. There are many popular frameworks like Hadoop, Spark, Flink, Storm and Samza designed for processing big data. These techniques are also used to extract useful information from data using predictive analytics, user behavior and analytics.

Characteristics of Big Data can be understood in terms of volume, variety, velocity and variety. Following are the characteristics of big data:

- 1) **Volume:** As the name indicates Big Data is related huge size. It is the size that plays a very vital role in determining value of data. While dealing with big data, 'Volume' is one of the main characteristic that is considered. It refers to the amount of data generated. The data can be low density, high volume, structured / unstructured or data of unknown value. This unknown data is converted into useful data using technologies like Hadoop. Data can range from terabyte to petabyte.
- 2) **Variety:** The second characteristics of Big Data are its variety. Variety refers to different formats of data. It may be structured, unstructured or semi-structured. The data can be audio, video, text or email. In this further processing is required to derive the meaning of data. In the present times data are flooded in the form of emails, photos, videos, monitoring devices, PDFs, audio, etc. Storage, mining and analyzing such a variety of huge data of is really big issues.
- 3) **Velocity:** The term 'velocity' means the speed of production of data or the rate at which the data is generated. The data is received at an unprecedented speed and must be acted upon in a timely manner and requires real-time evaluation and action. In today fast changing business

environment fast data generation and processing really matter to survive in cut throat competition. Big Data Velocity deals with enormous and constant and fast data which are generated from different sources like business processes, application logs, networks, and social media sites, sensors, mobile devices, etc.

- 4) **Variability:** Another aspect for big data is the inconsistency of data i.e the flow of data can be high or low. It means the inconsistency or variation related with generation, processing and storage of big data. This can occasionally happened which can obstruct the process of managing and effectively managing the data. There are challenges in managing this flow of data.
- 5) **Value:** Each form of data has some value which needs to be revealed. There are certain qualitative and quantitative techniques to derive meaning from data. For deriving value from data, certain new discoveries and techniques are required.



Figure: Characteristics of Big Data

Applications of Big Data in Various Fields

Big Data can be applied in various fields like retail, finance, digital media, healthcare, customer services etc.

- 1) **Government:** Big Data are used by government and policy maker to make different policy and also used by government to conduct various survey or campaign.

- 2) **Finance:** It can be used to purpose financial forecasting and market prediction. It is used for risk analysis, fraud detection, high-speed trading and for analytics.
- 3) **Healthcare:** Big Data is used in health care services for clinical data analysis, disease pattern analysis, medical devices and medicines supply, drug discovery and various other such analyses. Big Data analytics can be used to improve the healthcare systems.
- 4) **Media:** Media uses Big Data for various mechanisms like ad targeting, forecasting, click stream analytics, campaign management and loyalty programs. It is mainly focused on following three points: Targeting consumers, Capturing of data and Data journalism.
- 5) **Information Technology:** Big Data has helped employees working in Information Technology to work efficiently and for widespread distribution of Information Technology.
- 6) **IoT(Internet of Things).** Data can be extracted from IoT devices for mapping which helps in interconnectivity. This mapping proves helpful to target customers and for media efficiency by the media industry.

Benefits of Big Data

Big Data serves many benefits, especially for large organizations.

- 1) **Time management:** Big data helps to save precious time, because instead of spending hours in managing different amounts of data, big data can be managed efficiently and at a faster rate.
- 2) **Accessibility:** Big Data can be easily accessible
- 3) **Trustworthy:** Big Data is reliable. We can get valuable information from the data.
- 4) **Relevant:** Data generated can be used for relevant purpose.
- 5) **Secure:** By using various advanced technologies and techniques data can be made more secured.

Uses of big data

Every 60 seconds, 136,000 photos are uploaded, 510,000 comments are posted, and 293,000 status updates are posted. That is a LOT of data. (<https://www.simplilearn.com>). Facebook uses more 300 petabytes of data to handle their around 1.19 billion monthly active users. It uses open source software called Presto to handle 300 Petabytes of daily data. (www.adweek.com). Facebook has to deal with enormous data on daily basis. They have unique storage scalability challenges related to data warehouse which stores upwards of 300 PB of Hive data, with an incoming daily rate of about 600 TB. Due to large increase in active user of facebook the data

storage warehouse of facebook has 3 times more. To meet such challenges storage efficiency and efficient warehouse infrastructure is needed.

Facebook uses highly scalable open-source software technology called **Hadoop** to handle and storage of big data. (engineering.fb.com)

- Another Example of a brand that uses Big Data for targeted advertising is **Netflix**. It is a good example of a big brand that uses Big Data analytics for targeted advertising. With more than 100 million subscribers, the company collects huge data, which is a key to achieving industry status that boosts Netflix. If you subscribe, you know how they send you suggestions for the next movie you should watch. Basically, this is done using your past research and monitoring data. This data is used to give them an overview of what interests the subscriber the most.
- Coca-Cola is also good example of a Company that uses Big Data for Customer Acquisition and Retention. It uses big data analytics to drive customer retention is Coca-Cola.
- Amazon Fresh and Whole Foods use Big Data to Drive Innovations. This is a perfect example of how big data can help improve innovation and product development. Amazon uses Big Data Analytics to create a recommendation system based on what a customer has ordered previously and their cart details using collaborative filtering. Amazon also uses big data analytics in the supply chain to deliver ordered projects using optimization methods. Amazon also uses big data analytics for product pricing by analyzing competitor prices and product availability in the market.
- Several companies and organizations are regularly motivated to expand new and better data storage methods and tools to analyze them. The main technologies enabling the big data phenomenon include: in-memory computing, parallel computing, cloud computing, non-relational databases and streaming computing. A middleware software called 'In-Memory Computing' are used for data storage and collection. The basic logic is that data is accessed from memory (RAM) rather than on the hard drive during analysis.
- Several institutes that in the past did not have access to large IT facilities can now purchase services from cloud service providers (Indrawan-Santiago, 2012). IT utility providers sell the storage space and computing power of their data centers (cloud) using pay-as-you-go pricing (Armbrust et al., 2010). Thus, users benefit from highly scalable

IT services without having to make a significant initial investment or having long-term fixed costs.

Top Big Data Companies of the world are:

- | | |
|-----------------|-------------|
| • IBM | • Microsoft |
| • HP Enterprise | • Google |
| • Teradata | • Splunk |
| • Oracle | • Alteryx |
| • SAP | • Cogito |
| • Amazon | • EMC |

Challenges of Big Data

While handling and storing there are challenges that need to be addressed.

- As billions of data need proper storage system, a major challenge associated with data is its storage. Problems like quality, reliability authenticity, errors, duplicity, conflicts etc. are major challenge in case big data.
- Big data analysts needed skilled and technology savvy staff. But there is huge shortage of staff who can work in this field considering the fact that huge amount of data is produced every day.
- There is problem of authenticity in case big data. The data should also be precise as imprecise data can lead to wrong decisions that will affect the company business. Therefore there is need of quality data and quality data analysis and testing which is a time-consuming process and expensive process.
- Biggest risks in big data are security and privacy of data . The tools that are used for analyzing, storing, managing big data uses data from different sources. This makes data vulnerable to exposure. It increases security and privacy concerns.
- The most important concern about big data is about ethical concern and privacy. One danger associated with big data is illegal selling of data to third parties.
- Management challenges like need for skilled leaders and management team that can identify the opportunities of big data to the company. There is also challenge of talent management.

Conclusion

Big Data describes the large volume of data in structured and unstructured manner. Big Data helps to take faster and economical decision with the help of technology like Hadoop and cloud-based analytics. The challenges associated with big data are not about large amount of data but is about how organizations are using this data. There are many challenges to manage such huge volume of data such as capture, store, data analysis, data transfer, data sharing etc.

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